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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,463	09/27/2004	Kazuyoshi Honda	10873.1171USWO	2211

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EXAMINER	
WIECZOREK, MICHAEL P	
ART UNIT	**PAPER NUMBER**
4172	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,463	HONDA ET AL.	
	Examiner	Art Unit	
	Michael Wieczorek	4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5 and 7-11* is/are pending in the application.

4a) Of the above claim(s) *10 and 11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5 and 7-9* is/are rejected.

7)☒ Claim(s) *10 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

By amendment filed June 24, 2008, claims 1-4, 6 have been cancelled, claim 5 has been amended, and claims 10-11 are new. Claims 5, 7-11 are currently pending. The applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. However, claims 10-11 are objected and should be withdrawn from the consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03. Claims 5, 7-9 of the present case relate to the elected apparatus invention while claims 10-11 relate, as disclosed by the applicant, to a product by process invention which was not present during the initial examination on the merits and thus a non-elected invention.

If applicant wishes to pursue a newly claimed independent invention from the invention previously elected and examined, applicant must file a divisional or CIP request for the examination of such an invention.

Response to Arguments

1. Applicant's arguments with respect to claims 5, 7-9 have been considered but are moot in view of the new ground(s) of rejection based on the amendments made to these claims. For only the applicant's arguments that are valid against instant amended claims will be addressed

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 5, 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano (U.S. Patent Publication No. 2002/0001733) in view of Shinohara et al (Japanese Patent JP06-122969).

The claims disclose an apparatus comprising a vacuum container; a means of supporting a supporting base in an inner portion of the vacuum container; an electron beam evaporation source containing a first thin film material; an electron beam source that emits an electron beam used to evaporate the first thin film material; and a resistance heating evaporation source that heats and evaporates a second thins film material. The electron beam evaporation source, the electron beam source and the resistance heating evaporation source are arranged so that the path along which the electron beam travels intersects with a line segment connecting the resistance heating evaporation source with the surface to be vapor deposited as it travels to the electron evaporation source.

The recitation "manufacturing a thin film in which the thin film is formed on a supporting base" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Yano teaches an apparatus comprising a vacuum container in the form of a vacuum chamber 11 and a supporting base in the form of a substrate 12. The apparatus further comprises a means for supporting the substrate 12 in the form of a substrate holder 12a. As is disclosed in Figure 1 of the reference, both the substrate 12 and substrate holder 12a are inside the vacuum chamber 11 thus the references teaches a means for supporting the supporting base in an inner portion of the vacuum container or chamber. (Page 4 Paragraph 0052-0053, Figure 1)

The apparatus of Yano further comprises a electron beam (EB) evaporation source 15 containing a first thin film material in the form of aluminum sulfide 15a, an electron beam source in the form of an electron gun 51, a resistance heating evaporation source in the form of a K-cell 14 containing a second thin film material in the form of Sm metal material 14a. As is disclosed in Figure 1 of the reference, the EB evaporation source 15 and K-cell 14 are arranged within the vacuum chamber 11 so as they face the surface of the substrate 12 to be vapor deposited. (Page 4 Paragraph 0052, 0054, Figure 1)

Though the apparatus taught by Yano comprises all the structural components claimed by the present invention it does not teach the arrangement of the components where the path along

which the electron beam travels intersects with a line segment connecting the resistance heating evaporation source with the surface to be vapor deposited as it travels to the electron evaporation source.

Shinohara et al teaches a vapor deposition apparatus wherein a nozzle that releases a reactive gas into the vacuum container or vacuum vessel is configured in such a way that the flow path of the reactive gas spouted from the nozzle crosses the flow path of an electron beam that is being used to heat a material for vapor deposition (Page 2 Lines 1-4).

Furthermore, Shinohara et al teaches that the components of the apparatus are configured in this manner so that the reactive gas will be ionized by the electron beam (Page 4 Lines 30-36) and it is well known with the art that ionized gasses and vapor deposition materials produce a superior product to those that have been formed from non-ionized gasses and vapor deposition materials.

The first thin film material of Yano is going to be ionized because it is being heated by the electron beam generated by the electron gun but the second thin film material is not going to receive this benefit because it is being heated by resistance heating. Therefore, based on the teachings of Shinohara et al, in order for the second thin film material of Yano to receive the benefits of ionization it would have been obvious to one of ordinary skill in the art at the time the present invention was made to arrange the electron beam source and the resistance heating evaporation source so that the electron beam emanated from the electron beam source would intersect with a line segment connecting the resistance heating evaporation source with the surface to be vapor deposited because the vapor of the second thin film material would be traveling up along this line segment and thus become ionized as it intersects with the electron

beam. Based on this configuration a superior product would be produced than the one that would normally be produced by the apparatus of Yano because both thin film materials have been ionized instead of just one.

As for claim 7, the apparatus of Yano comprises a feed gas inlet port 11b which releases a reactive gas, in the form of hydrogen sulfide gas, into the vacuum chamber 11 (Page 4 Paragraph 0052, Figure 1) but it does not teach a nozzle to release the reactive gas. The apparatus of Shinohara et al comprises a nozzle which is used to introduce a reactive gas into the vacuum vessel. At the time the present invention was made it would have been obvious to one of ordinary skill in the art to substitute the feed gas inlet port 11b of Yano with the nozzle of Shinohara et al because both components perform the same function. Because the two components perform the same function one of ordinary skill would have a reasonable expectation of success if the nozzle of Shinohara et al was substituted for the feed gas inlet port 11b of Yano.

As for claim 9, the specification of the present case defines "substantially on the same plane" when the electron beam can pass through the vapor stream of the second thin film material that is emanating from the resistance heating source. As was discussed in the claim 5 rejection, based on the teachings of Yano in view of Shinohara et al the electron beam source and the resistance heating source are arranged so that the electron beam emanated from the electron beam source intersects a line segment connecting the resistance heating source with the surface to be vapor deposited thereby allowing the electron beam to pass through the vapor stream of the second thin film material thus ionizing it. For this reason it can be considered that the electron beam evaporation source, the electron beam source and the resistance heating evaporation source

of the apparatus taught by Yano in view of Shinohara are substantially on the same plane. Thus claim 9 is rejected.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yano in view of Shinohara et al as applied to claim 5 above, and further in view of Suzuki et al (U.S. Patent # 4,622,919).

The teachings of Yano in view of Shinohara et al as they apply to claim 5 have been discussed previously.

Neither Yano nor Shinohara et al teach the use of a bias device to apply a bias voltage to the surface to be vapor deposited.

Suzuki et al teaches a film forming apparatus comprising a bias device in the form of a bias voltage source 14 which is connected to, thus supplying bias voltage, a surface to be vapor deposited in the form of substrate T. Suzuki et al teaches that the bias voltage source 14 is present to accelerate the ionized vapor toward the substrate T for deposition. In other words the bias voltage supplied to substrate T attracts the ionized vapor to the surface of substrate T. (Column 4 Lines 9-16, Figure 2)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the present invention was made to add the bias device of Suzuki et al to the apparatus of Yano in view of Shinohara et al so that a bias voltage could be supplied to the deposition surface thus causing more attraction between the surface to be vapor deposited and the ionized thin film vapor materials.

Conclusion

6. Claims 5, 7-9 have been rejected. Claims 10-11 were withdrawn from consideration because they relate to an invention that was not present during the initial examination on the merits of the originally elected apparatus invention.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Wieczorek whose telephone number is (571)270-5341. The examiner can normally be reached on Monday through Friday; 7:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MPW/

/Michael Wieczorek/
Examiner, Art Unit 4172
July 17, 2008

/Brian K Talbot/

Primary Examiner, Art Unit 1792